

REMARKS

Claims 1-8, all the claims pending in the application, stand finally rejected in the Office Action dated September 22, 2005. In reply, Applicant is filing an RCE and the present Amendment under 37 C.F.R. § 1.114(c) in order to enter amendments to claims 1, 3-5, 7 and 8. Applicants believe that, in view of the extent of the amendments, the Examiner would not have entered them after final rejection. However, Applicant firmly believes that these amended claims now clearly distinguish over the prior art cited by the Examiner in the final rejection. The basis for that belief is detailed subsequently.

Claim Rejections - 35 U.S.C § 102

Claims 1-8 are again rejected under 35 U.S.C. § 102(b) as being anticipated by multiple patents teaching ultrasound transducer array devices. This rejection is traversed for at least the following reasons.

The Examiner essentially repeats the text of his rejection of claims 1-8 in the Office Action dated January 6, 2005, citing the patents to Tsuchiko et al (5,251,631), Okada et al (5,657,761), Magrane (4,893,284), Ikeda et al (4,811,740) and Snyder et al (6,120,449), as applied to claims 1-3, 4 and 7-8. The Examiner also cites the patents to Uchiumi et al (5,092,337), Brock-Fisher (6,500,126) and Snyder (5,520,187) with respect to a rejection of claim 3.

Response to Amendment and Arguments

In response to Applicant's amendment to the claims and supporting arguments in the Amendment filed on July 5, 2005, the Examiner finds that they are not sufficient. The Examiner notes the further limitation to claims 1, 3, 4, 7 and 8 that

“said transducers comprising elements in an original pattern that are determined to be working and elements in a reconfigured pattern includes additional elements outside of said original pattern that are determined to be working”

and states that this limitation is not considered to represent patentable subject matter. The Examiner states that all the arrays involve the selective configuration of elements with many including additional elements later included in the energized subgroup which fires the individual

scan line beams as they progress across the array face. The Examiner particularly refers to Tsuchiko et al at col. 4, lines 34-37. The Examiner concludes that the amendatory language merely refers to the program connection/disconnection of individual transducer elements during the process of an image scan. The Examiner assumes that all of the elements typically are working since the array probe is presumed to be in a normal operating state.

Applicant also notes that the Examiner commented at page 10 of the previous Office Action dated January 6, 2005 that with respect to general optimization of defective transducers, the Examiner finds three bases for patentability. First, the prior art does not teach or suggest "an ultrasound system which re-optimizes or reconfigures in the face of **defective elements** by selecting at least some elements other than the originally selected ones among still working elements for array re-optimization." Second, the Examiner further notes in his comments that the prior art does not teach or suggest a re-optimization process for a random array in the face of **defective elements** which involves a re-selection of new contributing elements, apart from the change in active elements said imparted by dead load. Finally, the Examiner observes that with respect to smart probes or other modes to access pre-calibration storage, the prior art does not teach or suggest the interaction of probe connector or probe resident identification information with the ultrasound system to accomplish such transducer **defect** re-selection or random array re-optimization by selection of new contributing elements.

With these comments in mind, Applicants have again further amended the independent claims in order to specify the structure and operational arrangement of the present invention, with a focus on **defective elements**, such that they are clearly different from the prior art.

Given this focus, Applicant respectfully submits that the cited references have common teachings with respect to the originally claimed structures, and thus, the differences between them and the present invention as now defined by the amended claims may be most efficiently explained by reference to the most relevant prior art patent, which in Applicant's view is the patent to Snyder et al.

Snyder et al

Snyder et al. discloses that the inoperable elements are compensated for by bridging or shorting them to fully operative elements. A bridge between a fully or partially inoperative element and an adjacent fully operative element can be achieved by physically shorting the elements somewhere in the signal chain or by electrically connecting the elements via switches.

However, Snyder et al. does not disclose a transducer array having a first number of ultrasonic transducers including ultrasonic transducers in an original pattern that are previously determined to be working and ultrasonic transducers outside of the original pattern, nor that a second number of ultrasonic transducers selected from among the first number of ultrasonic transducers are connected to an external apparatus main body, nor that the second number of ultrasonic transducers includes (i) ultrasonic transducers in the original pattern except for at least one **defective** ultrasonic transducer and (ii) at least one additional ultrasonic transducer outside of the original pattern in place of the at least one **defective** ultrasonic transducer.

Claim Rejections - 35 U.S.C. § 103

Claims 2 and 3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over any of the multiple patents teaching ultrasound transducer array devices as previously identified, in combination with Brisken et al (5,209,235). This rejection is traversed for at least the following reasons.

Applicants would submit that Brisken et al does not remedy the deficiencies in Snyder et al or the other references, taken alone or in combination. Thus, the claim should be patentable over the prior art.

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Snyder et al (6,129,449) in view of Haider et al (6,565,510). This rejection is traversed for at least the following reasons.

Applicants would submit that Haider et al does not remedy the deficiencies in Snyder et al or the other references, taken alone or in combination. Thus, the claim should be patentable over the prior art.

Amendment under 37 C.F.R. §1.114(c)
Application No. 10/670,601

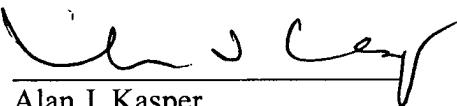
Claims 5-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsuchiko et al (5,251,631) or Snyder et al in view of Haider (6,565,510), Magrane (4,893,284) and further in view of Ikeda et al (4,811,740). The claims are also considered to be unpatentable over Ikeda et al alone. This rejection is traversed for at least the following reasons.

Applicants would submit that Ikeda et al does not remedy the deficiencies in Tsuchiko et al or Snyder et al in view of Haider, or Magrane, taken alone or in combination. Thus, the claim should be patentable over the prior art.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Alan J. Kasper
Registration No. 25,426

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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